

WHAT IS CLAIMED IS:

1. An image display apparatus, comprising:

a display panel having pixels arranged in a matrix and for performing a display operation;

a scan driver for sequentially selecting pixel lines of the display panel;

5 a data driver for applying color signals to a corresponding pixel line when the pixel line of the display panel is selected; and

a display controller for receiving color data and generating timing signals for controlling the scan driver and the data driver, while transforming the color data into analog signals and performing gamma correction to the transformed analog signals to generate the color signals,

10 wherein the display controller determines reference data for brightness adjustment in accordance with an average brightness of a screen displayed by the RGB data, and performs gamma correction by adjusting gray levels of the RGB data in accordance with the reference data for brightness adjustment.

15 2. The image display apparatus according to claim 1, wherein the color signals are RGB signals, and the color data is RGB data.

3. The image display apparatus according to claim 2, wherein the RGB data inputted to the display controller are provided from a graphic controller of a mobile telephone or a PDA
20 outside the image display apparatus.

4. The image display apparatus according to claim 2, wherein the display controller comprises:

a timing signal generating block for generating timing signals for controlling the scan driver and the data driver by using the received RGB data and transforming a data format of the RGB data;

5 a data operating block for calculating average brightness of a screen displayed by the received RGB data and outputting address information corresponding to the calculated average brightness;

a memory for storing reference data for brightness adjustment as data information corresponding to addresses, the reference data being matched with the calculated average brightness, and outputting reference data for brightness adjustment in response to the address
10 information outputted from the data operating block;

a D/A converting means for transforming the RGB data outputted from the timing signal generating block and the reference data for brightness adjustment into analog signals;

an amplifying block for amplifying the analog signals of the reference data for brightness adjustment outputted from the D/A converting means; and

15 a differential amplifying block for controlling white level of the RGB data by using analog signals of the RGB data and the reference data for brightness adjustment and generating RGB signals.

5. The image display apparatus according to claim 4, wherein the reference data for
20 brightness adjustment comprises of red color components, green color components, and blue color components.

6. The image display apparatus according to claim 4, wherein the reference data for brightness adjustment is set to be high when the average brightness of a screen has a high value and is set to be low when the average brightness of a screen has a low value.

5 7. The image display apparatus according to claim 4, wherein the differential amplifying block includes a differential amplifier for each of the red color component, green color component and blue color component and each of the differential amplifiers processes the color component associated therewith.

10 8. The image display apparatus according to claim 4, wherein the differential amplifying block adjusts the white level of the RGB signal by controlling the RGB signals with the analog signals of the reference data for brightness adjustment.

9. An image display apparatus, comprising:
15 a timing signal generating block for generating a timing signal for controlling a scan driver and a data driver by using inputted RGB data and transforming a data format of the inputted RGB data;
a data operating block for calculating an average brightness of a screen displayed by the inputted RGB data and outputting address information corresponding to the calculated average
20 brightness;

a memory for storing reference data for brightness adjustment as data information corresponding to addresses, the reference data being matched with the calculated average

brightness, and outputting reference data for brightness adjustment in response to the address information outputted from the data operating block;

a D/A converting means for transforming the RGB data outputted from the timing signal generating block and the reference data for brightness adjustment into analog signals;

5 an amplifying block for amplifying the analog signal of the reference data for brightness adjustment outputted from the D/A converting means; and

a differential amplifying block for controlling white level of the RGB data by using analog signals of the RGB data and the reference data for brightness adjustment and generating RGB signals.

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10. The image display apparatus according to claim 9, wherein the reference data for brightness adjustment comprises red color components, green color components, and blue color components.

15 11. The image display apparatus according to claim 9, wherein the reference data for brightness adjustment is set to be high where the average brightness of a screen has a high value and is set to be low where the average brightness of a screen has a low value.

20 12. The image display apparatus according to claim 9, wherein the differential amplifying block includes a differential amplifiers for each color component.

13. The image display apparatus according to claim 12, where there is a red color component, a green color component and a blue color component.

14. The image display apparatus according to claim 9, wherein the differential amplifying block adjusts the white level of the RGB signal by controlling the RGB signal with the analog signal of the reference data for brightness adjustment.

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15. A method for generating color signals for an image display apparatus, the method comprising:

receiving color data;

generating timing signals for controlling a scan driver and a data driver;

10 transforming the color data into analog signals;

determining reference data for brightness adjustment based on an average brightness of a screen displayed by the color data; and

performing gamma correction on the transformed analog signals to generate the color signals by adjusting gray levels of the color data based on the reference data for brightness
15 adjustment.

16. The method according to claim 15, wherein the color data is RGB color data and the color signals are red color signals, blue color signals and green color signals.

20 17. The method according to claim 15, further comprising:
calculating an average brightness of a screen displayed by the received color data; and
outputting address information corresponding to the calculated average brightness.

18. The method according to claim 17, further comprising:
storing the reference data for brightness adjustment as data information corresponding to
addresses, wherein the reference data is matched with the calculated average brightness.